

---

# Youth as Media Art Designers: Workshops for Creative Coding

**Kylie A. Peppler**

Assistant Professor  
Indiana University  
W.W. Wright Education Building  
Bloomington, IN 47405 USA  
kpeppler@indiana.edu

**Yasmin B. Kafai**

Associate Professor  
UCLA Department of Education  
2331 Moore Hall 951521  
Los Angeles, CA 90095 USA  
kafai@gseis.ucla.edu

**Abstract**

We describe our efforts to bring media arts into design work with the goals to introduce new expressive forms in programming to urban youth. We're presenting the findings from a series of workshop organized together with professional media artists that focused on immersion, interaction, color and perspective using Scratch, a media-rich programming environment. Our findings illustrate that a focused introduction of these features can be easily accomplished and help young designers to become more sophisticated in their creative expression. In the discussion we outline suggestions for activity and theme designs for future workshops.

**Keywords**

Media Arts, Programming, Creativity, Children Designers, Community Technology

**ACM Classification Keywords**

K.3.1. [Computers and education]: Computer Uses in Education. General Terms: Design, Human Factors

**Introduction**

While research on children as designers and design partners [2], as well as on design tools and materials [9], has been at the forefront of the field of interaction

design and children, it is only recently that design for creative expression has been included in these efforts. Perhaps one reason for this trend is that children's engagement with digital media production has recently proliferated thanks to their participation in social networking sites and virtual worlds, making creative and expressive applications of new media highly visible. This follows similar trends in the professional sector, as artists adopt digital technologies as creative forms [4] and in the academic field, where computer scientists have started exploring connections between computation and creativity to support the creative process of humans. For these and other reasons, we have seen an increased interest how digital tools and activities can be designed to create works of art [1] rather than to support the design of specific software applications such as games, robotic designs, or educational activities. The computational craft movement [3] is perhaps most closely related to our efforts of introducing a new creative component into the design of interfaces, tools, and activities for children. In this poster, we describe a series workshops and concepts of media art design that were introduced to better understand how artists look at the creative manipulation of computational features and report on the learning and perspective of media artists working with young designers in two computer clubhouses, community technology centers.

### **Workshop Series**

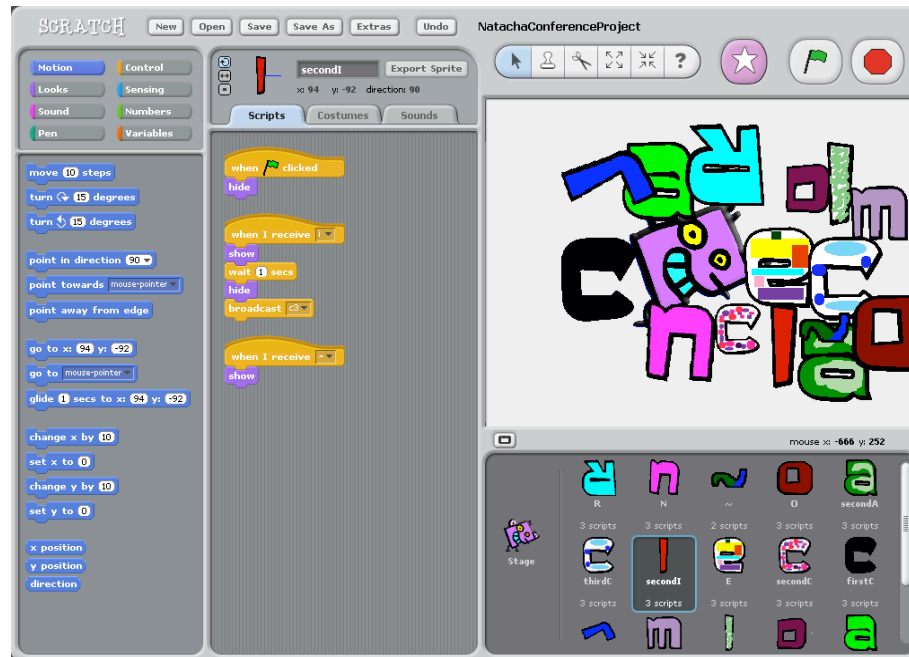
The workshops took place at two computer clubhouses located in Los Angeles, California [8]. Computer clubhouses are after-school, community technology centers that aim to give at-risk youth access to a rich array of new media including computers, videogames, a variety of creative software applications, including

Scratch, which was the focus of our three year investigation [5; 7]. Scratch was chosen as the focus of this work because it enabled many of the same applications as professional-line media arts software, including the ability to manipulate the language of the computer using computer programming [6] (see Figure 1). Objects can be any imported graphic image, uniquely created or drawn, or chosen from a personal archive. Designers can create or incorporate existing sound files, video, and other input/output devices can also be integrated into new design projects.

We worked together with the professional media artists to choose a core media arts concept to explore as the focus for each of the workshops. Initially, there were four core ideas that we explored: (1) Interactivity, (2) Color, (3) 3D Perspective, and (4) Immersive, First-Person Game Design. These represented a mix of concepts that are shared with the traditional arts (i.e., color and perspective) as well as some concepts and ideas that are unique to new media (i.e., interactivity and immersion).

#### *Workshop 1: Interactivity*

Interactivity is the ability of the viewer to directly manipulate and influence their experience of new media. Rather than creating new projects, the focus of this workshop was to think about user inputs and ways to interact with technology such as through the keyboard, mouse, or, in this case, the Wii controller. Youth discussed the affordances of each of these and talked about design conventions associated with each of the traditional user input devices and then experimented with the controllers to map programming commands onto various buttons on the Wii controller.



**figure 1.** Full screenshot of Scratch

#### *Workshop 2: Design & Color*

The second workshop focused on mixing colors interactively and on principles of generating color using digital tools. Because youth have so much experience with color, the media artist played a crucial role in elevating the conversation so that the youth weren't just playing with color, they really started to experiment with different color combinations – some good, some intentionally bad. It was really the resulting conversation about color that turned the activity into a worthwhile learning activity, which illustrates the role of having expert mentors on hand to inspire youth in their work.

#### *Workshop 3: Immersion*

All of the youth worked to modify existing games as part of the Adams' workshops. Most of the youth decided to modify Adams' first person, survival horror game since it was near Halloween when the youth were creating their projects (and perhaps because the horror

genre is very popular amongst youth). The original game, Adams had a haunted house that you explored in Scratch. Youth had clear ideas for modifying the games, adding future levels, and making it generally more difficult. As youth engaged in this type of game design, they were consciously shaping experiences for other youth and building their ideas of what it means to immerse others into their suggested 3-dimensional three-dimensional environments in Scratch.

#### *Workshop 4: Perspective*

The fourth workshop explored concepts of perspective drawing and motion as it related to Scratch and media arts. The 2-dimensional environment of Scratch lent itself well to exploring 3-dimensional movement. When it came time to exploring the concept of 3-dimensional movement, Scratch was a reasonably good tool to see this happening. However, youth were better able to explore the project than they were able to create something similar from scratch. This was due in large part to the sophistication of the code that was necessary to move objects at oblique angles and to make it increasingly get smaller as it disappeared into the distance.

### **Discussion**

We used the implementation of a series of workshops to understand how design media artists approach the creative manipulation of new media features such as immersion and interactivity and more traditional features such as color and perspective in a programming environment. While all the workshops were well received, we already noted in our observations that some features such as immersion also need to be contextualized in a way that allows youth with different interests to engage. We're also

aware that our choice of media arts features explored in the workshops was just a small subset of other equally important features. For instance, other workshops could focus on narrativity and explore different forms and pathways in interactive narrative. Digital illustrations could focus on the basics of drawing and painting using digital tools when kids think about their story and their characters while digital animation would focus on movement. Each of those would also involve different tools and extensions such as tablets to facilitate the technical aspects of manipulation for creative purposes. Another essential element of digital design is typography where young designers would be introduced to typographical terminology such as fonts, font families, size, kerning, leading, text and so on and explore the different meanings attached to the visuality of the text in the final project. In the end, we think that such workshops need to be situated within other ongoing design activities in order to give them a purpose and context because the goal of design media arts is to enrich and expand the young designers' sensibilities for greater creative expressiveness in their work. This last aspect is of particular relevance in low-income communities where youth are often perceived as promoting new uses of popular media but are standing on the sidelines when it comes to developing new technologies.

### Acknowledgements

Special thanks to Jay Yan, Pinar Yoldas, Tyler Adams and Casey Alt for coming for formulating the ideas and carrying out the workshops presented in this paper. The work reported in this paper was supported by grants of the UCLA Center for Community Partnerships and the National Science Foundation (NSF-0325828) to the second author in collaboration with Mitchel Resnick's research group at the

MIT Media Lab. The views expressed are those of the authors and do not necessarily represent the views of the supporting funding agencies or the University of California, Los Angeles.

### References

- [1] Cuthbertson, A., Hatton, S., Minyard, G., Piver, H., Todd, C., & Birchfield, D. (2007). Mediated education in a creative arts context: Research and practice at Whittier Elementary School. In IDC 2007 Proceedings (pp. 65-72). Aalborg, Denmark.
- [2] Druin, A. (1999) (Eds.). The design of children's technology. San Francisco, CA: Morgan Kaufman Publishers.
- [3] Eisenberg, M. and Nishioka, A. (1994). HyperGami: A Computational System for Creating Decorated Paper Constructions. Published in the Proceedings of Second International Meeting of Origami Science and Scientific Origami. Otsu, Shiga, Japan.
- [4] Paul, C. (2003). Digital Art. New York, NY: Thames & Hudson.
- [5] Peppler, K. & Kafai, Y. (2007). From SuperGoo to Scratch: Exploring creative digital media production in informal learning. *Learning, Media, and Technology*, 32(2), 149-166.
- [6] Reas, C. (2006b). Processing: programming for the media arts. *AI & Society*, 20(4), 526-538.
- [7] Resnick, M., Kafai, Y., & Maeda, J. (2003). ITR: A Networked, Media-Rich Programming Environment to Enhance Technological Fluency at After-School Centers. Proposal [funded] to the National Science Foundation, Washington, DC.
- [8] Resnick, M., Rusk, N., & Cooke, S. (1998). Computer Clubhouse: Technological fluency in the inner city. In D. Schon, B. Sanyal and W. Mitchell (Eds.), *High technology and low-income communities*. Cambridge, MA: MIT Press.
- [9] Resnick, M., Bruckman, A., & Martin, F. (1996). *Pianos Not Stereos: Creating Computational Construction Kits*. *Interactions*, (6), 35-46.